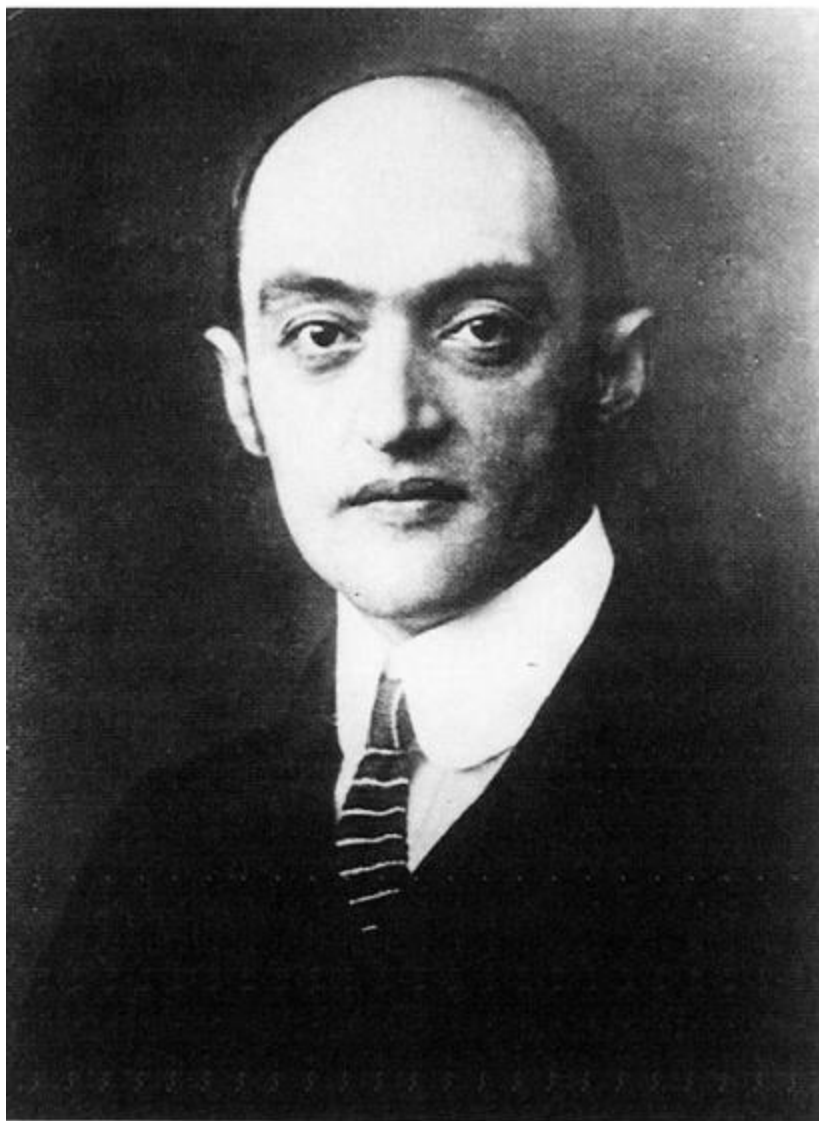


Creative Destruction and the AI revolution

Philippe Aghion

Nobel Lecture



CREATIVE DESTRUCTION...

- Process whereby new innovations displace old technologies
- Joseph Schumpeter in *Capitalism, Socialism and Democracy* (1942)



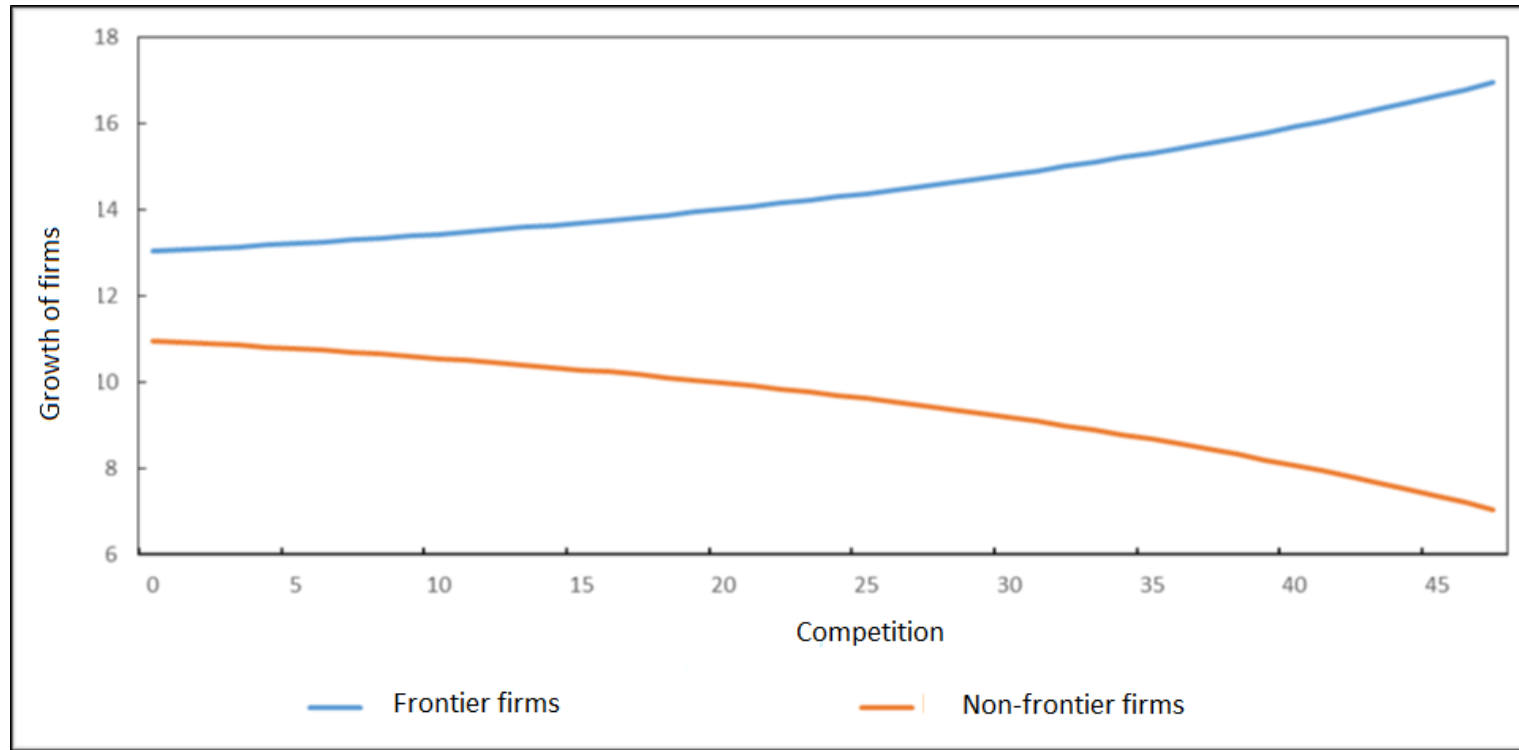
SCHUMPETERIAN GROWTH PARADIGM

- Long-run growth driven by cumulative process of innovation
- Innovations result from entrepreneurial activities motivated by prospect of innovation rents
- Creative destruction: new innovations displace old technologies

AT THE HEART OF THE PARADIGM

- Contradiction :
 - The innovator is motivated by prospect of monopoly rents
 - But those rents can be used *ex post* to prevent future innovations and to block new entry
- Regulating a market economy is largely about how to manage this contradiction

COMPETITION, GROWTH AND DISTANCE TO FRONTIER



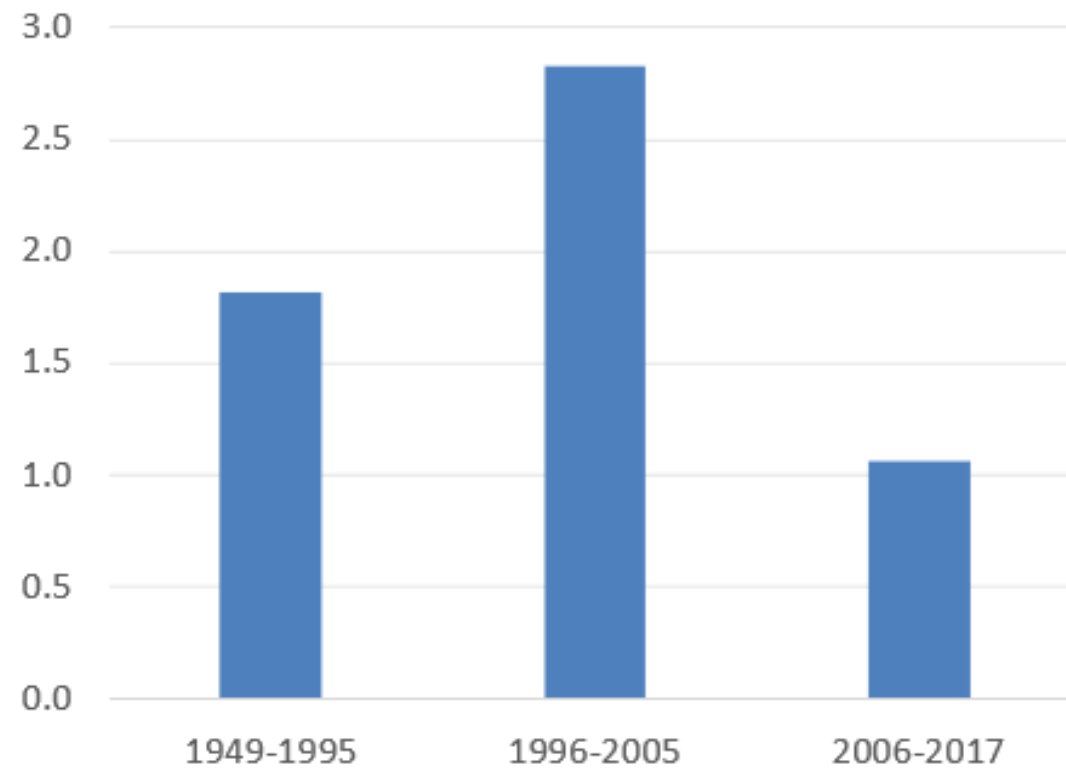
OUTLINE

- **Historical enigma**
- Rethinking capitalism

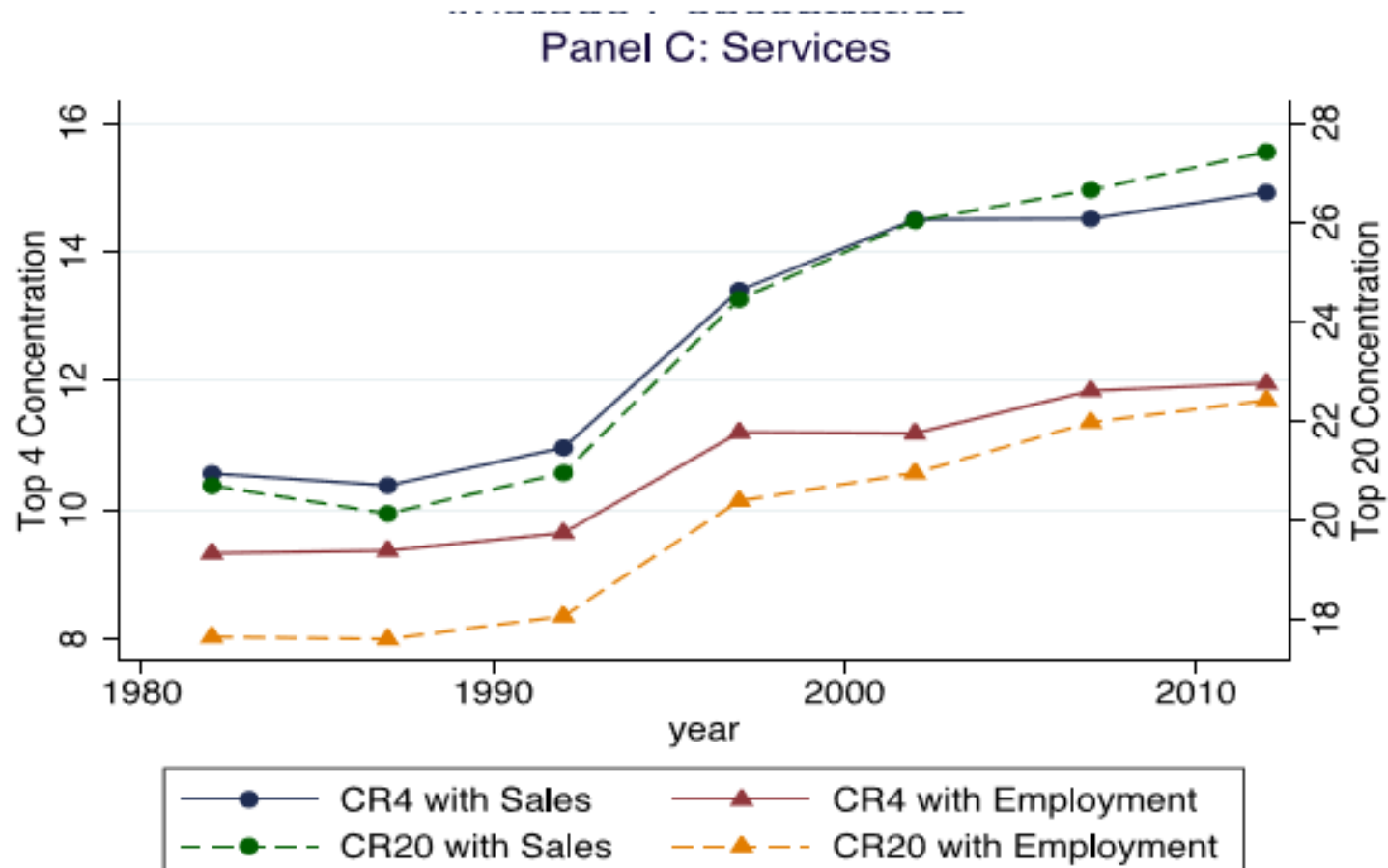
SOLVE HISTORICAL ENIGMA

- **Secular stagnation**
- Middle income trap

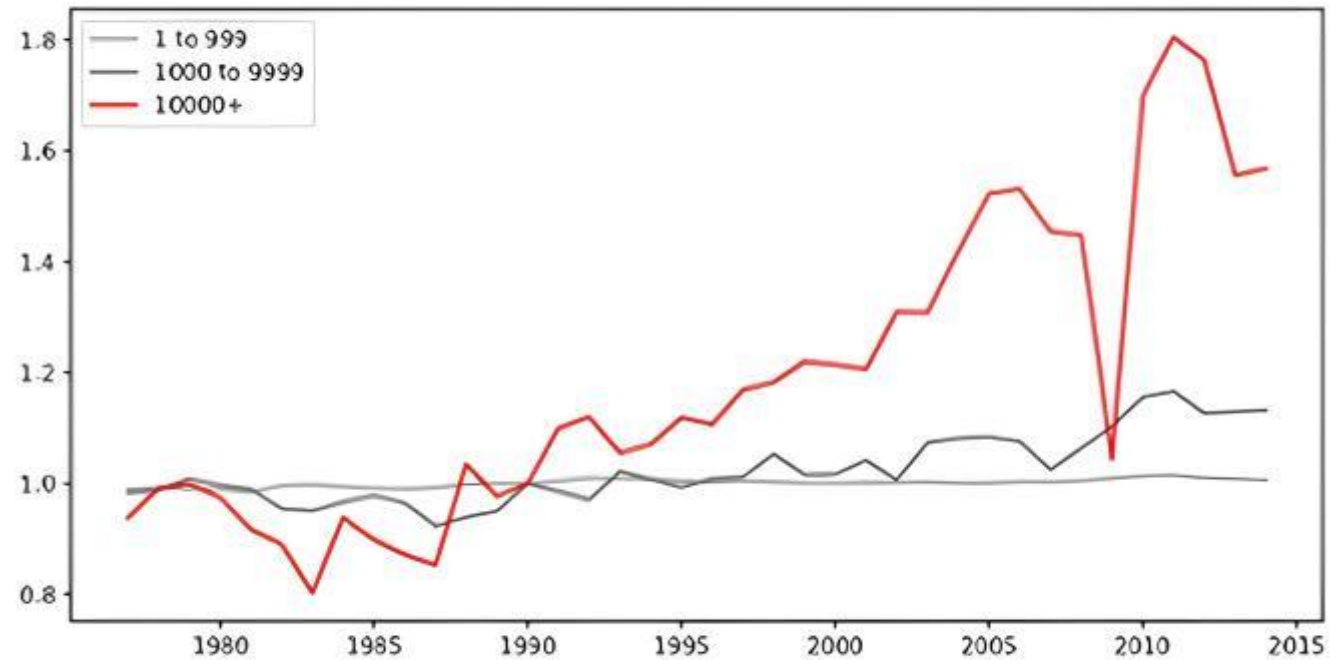
RISE AND DECLINE IN TFP GROWTH



RIISING CONCENTRATION IN SERVICES

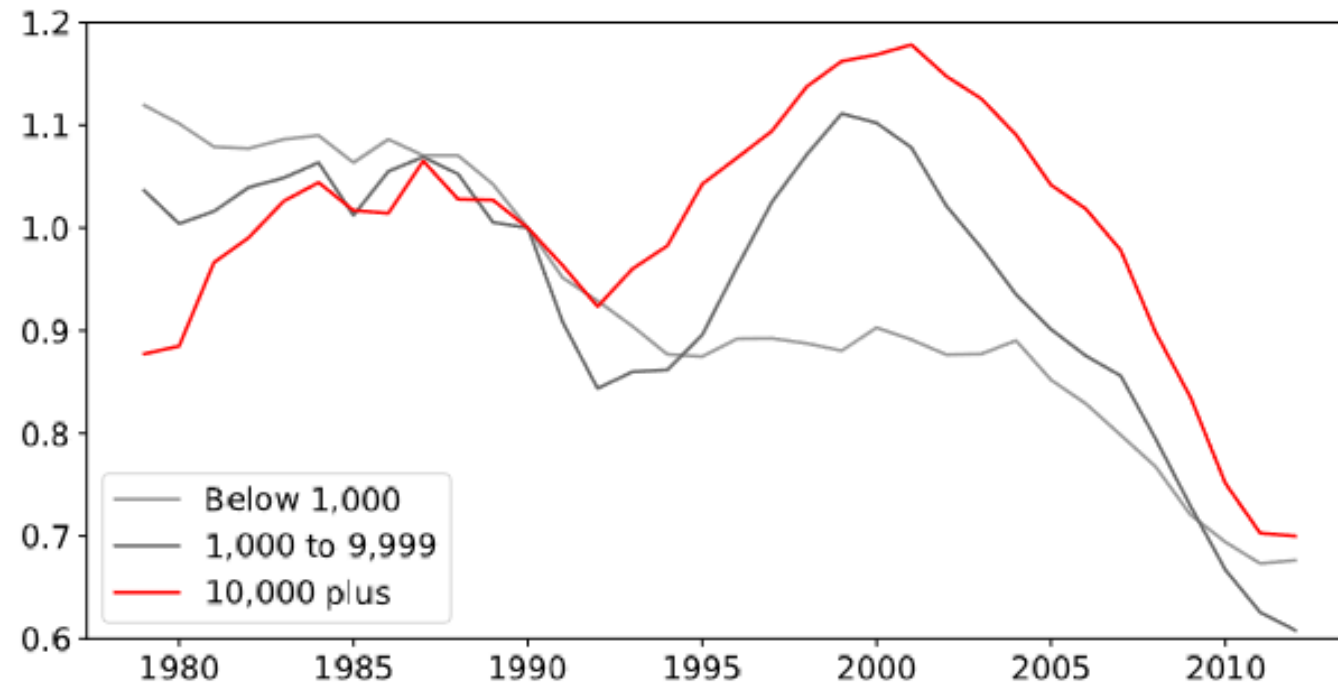


RISING ESTABLISHMENTS PER FIRM



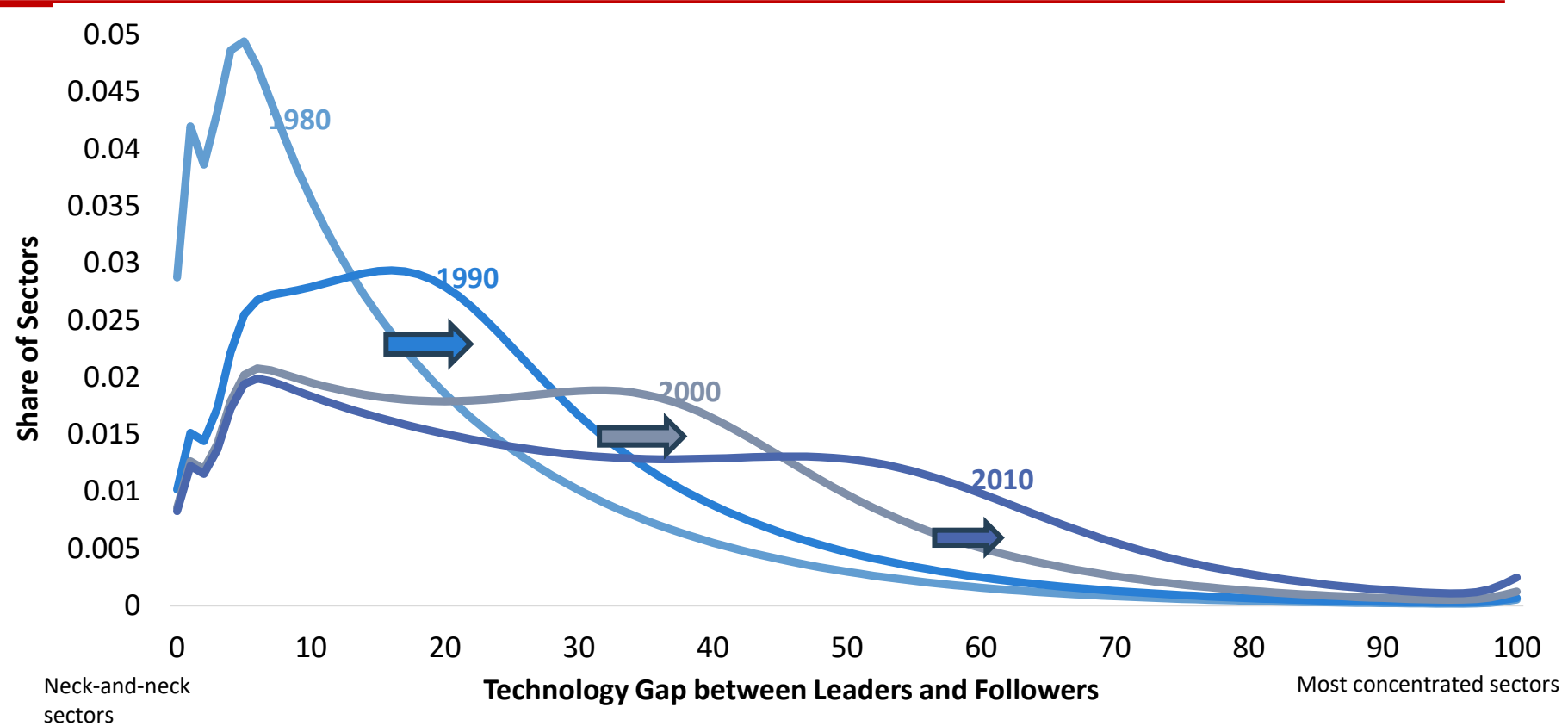
Source: U.S. Census Bureau's *Business Dynamics Statistics*

Rise and decline in employment-weighted plant entry rate

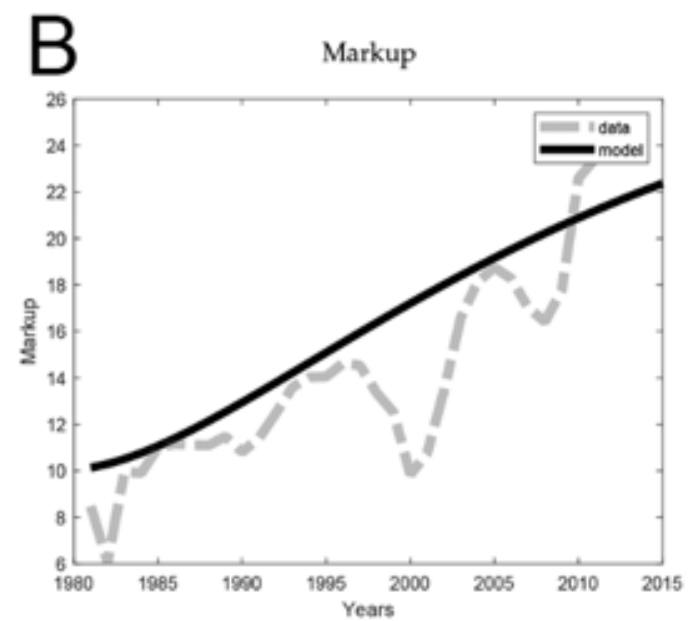
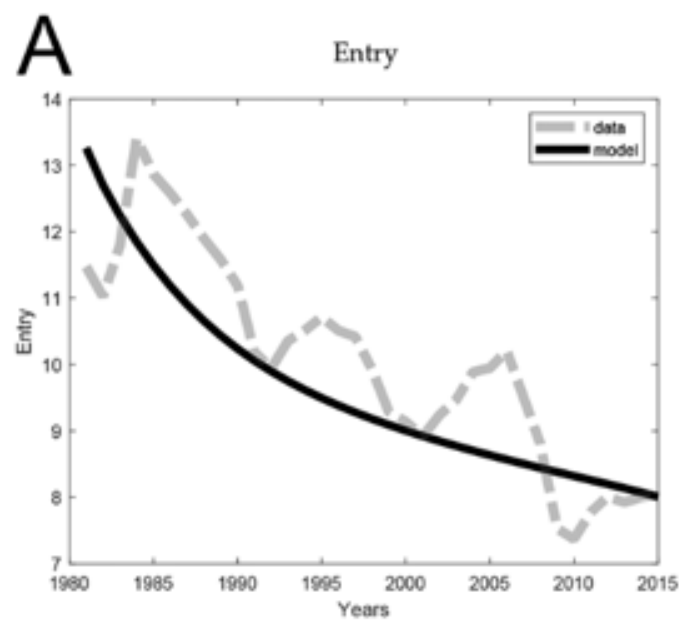


Source: U.S. Census Bureau's *Business Dynamics Statistics*. Job creation by birth over total employment by firm size bins. 5-year centered moving average.

WIDENING TECHNOLOGY GAP DISTRIBUTION AND INCREASING CONCENTRATION



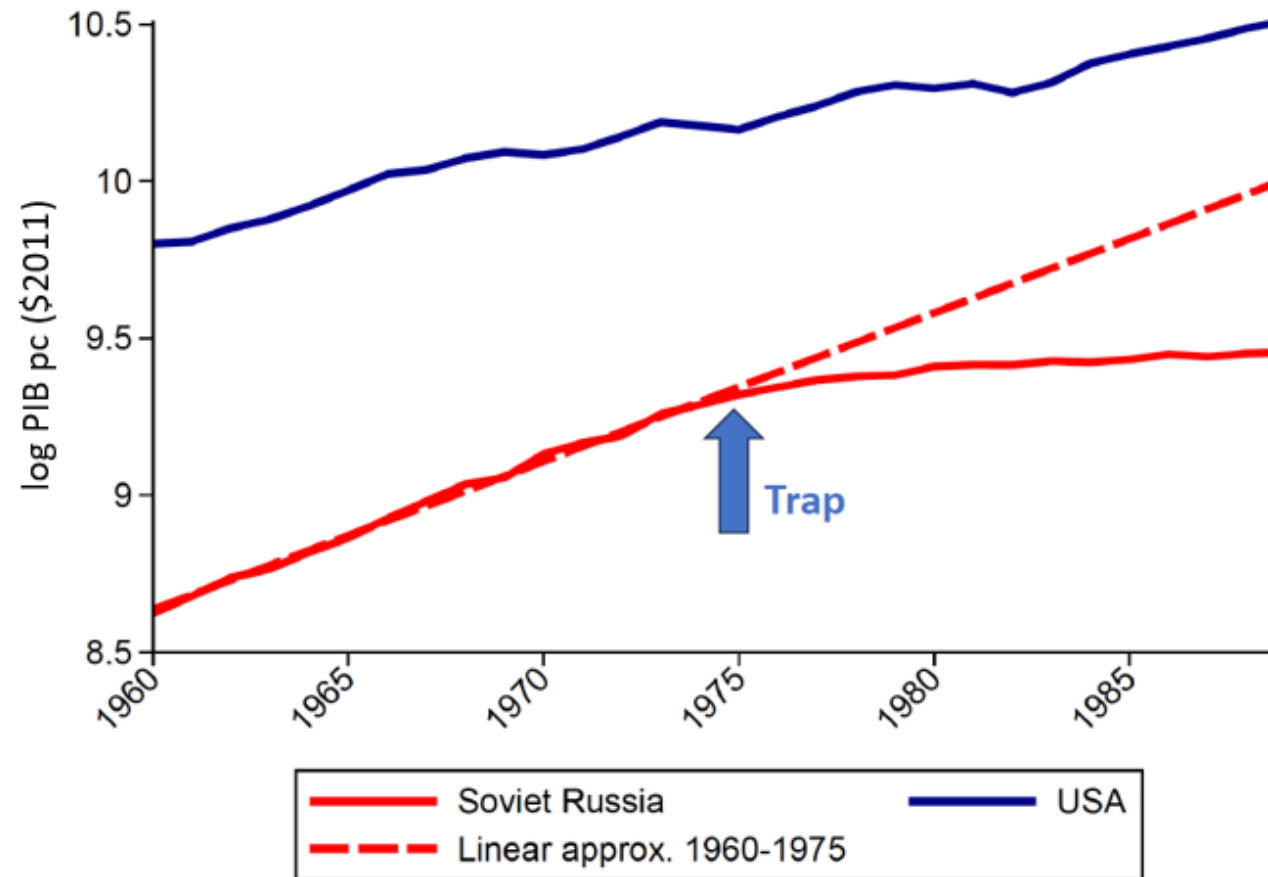
Lower diffusion cause laggards to fall further behind and help leaders become more entrenched.



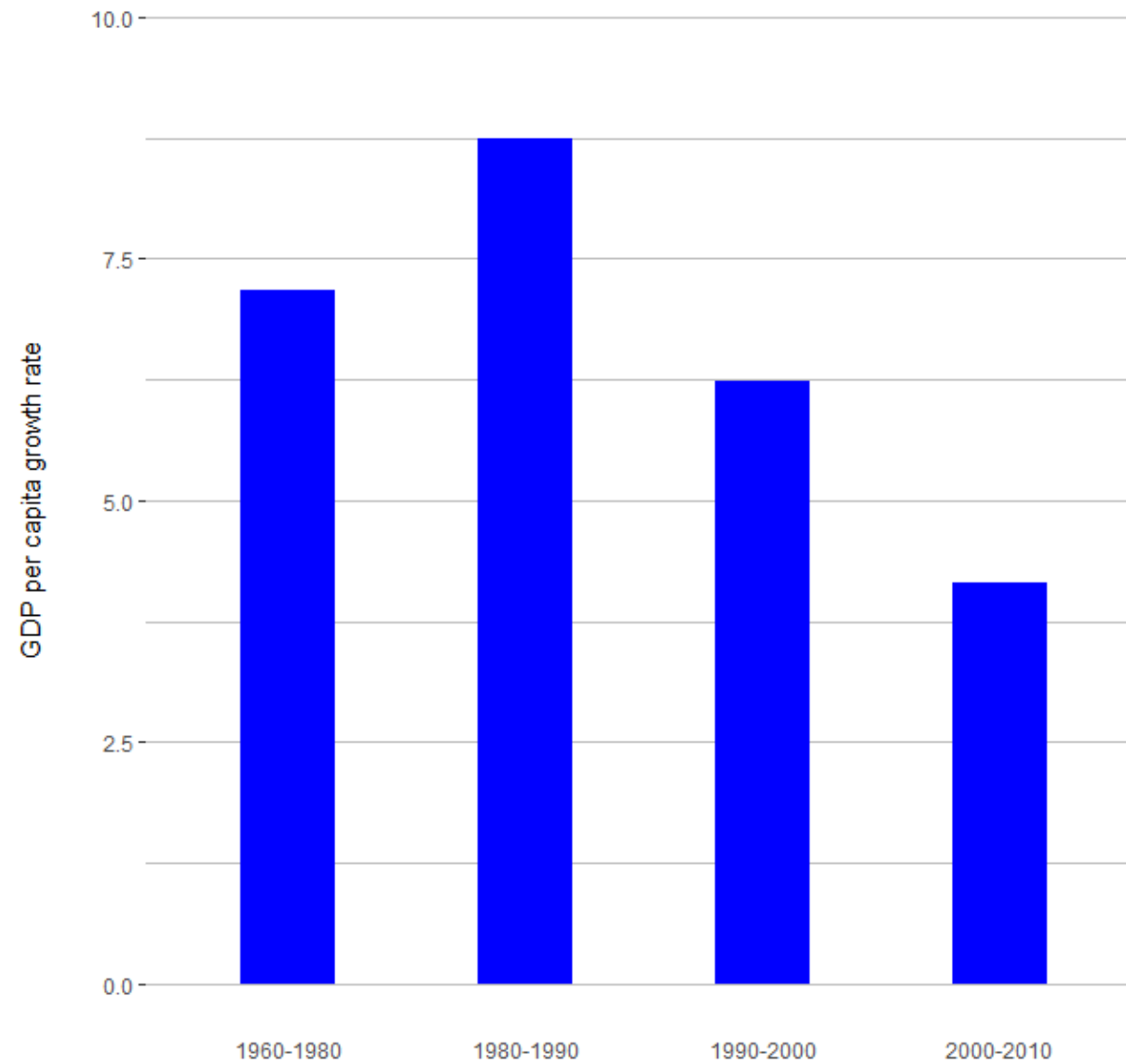
SOLVE HISTORICAL ENIGMA

- Secular stagnation
- **Middle income trap**

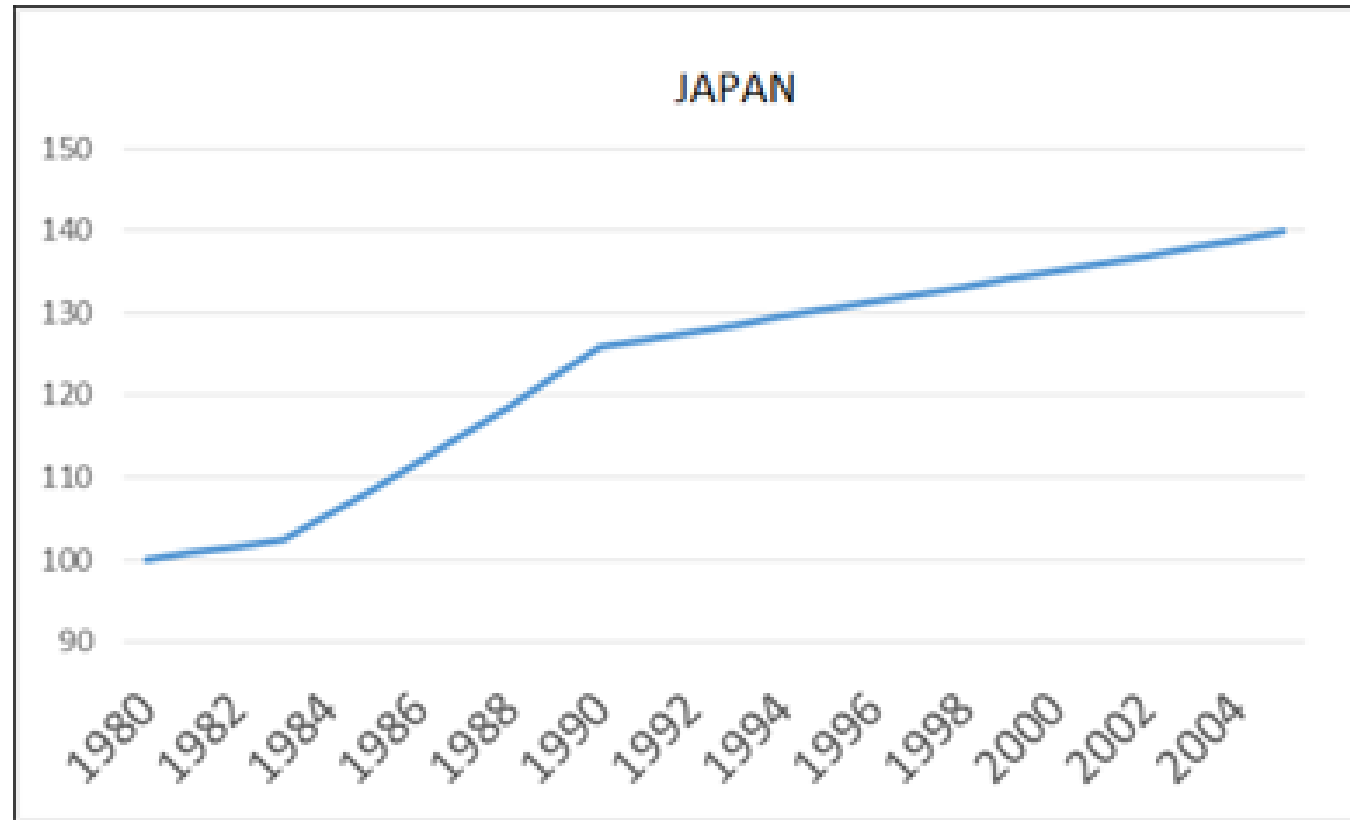
SOVIET UNION



KOREA: 1960-2010



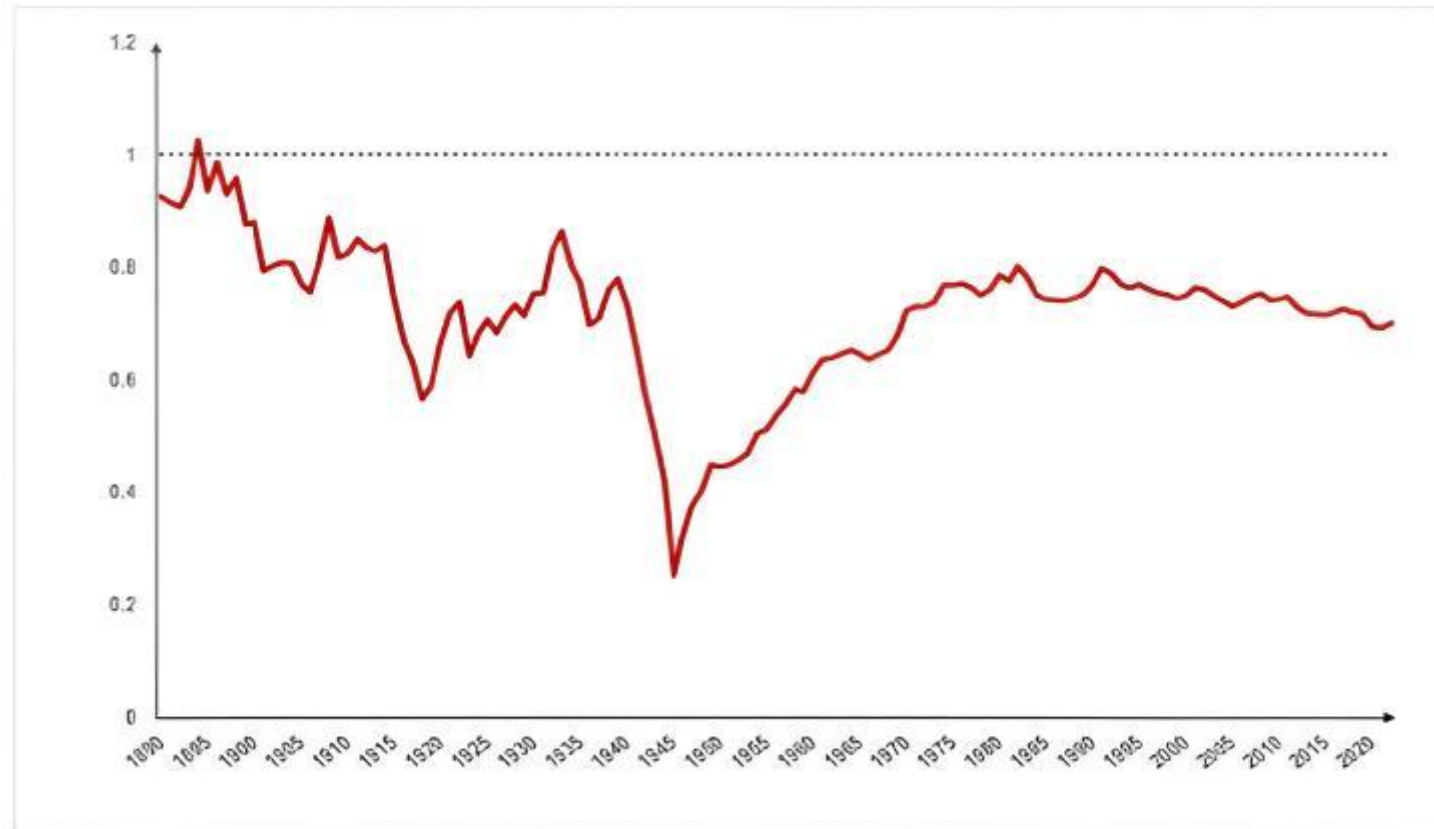
JAPAN



EU VERSUS US

BERGEAUD

Figure: GDP per capita in the euro area since 1890.
US = 1. Source: www.longtermproductivity.com



Middle technological trap

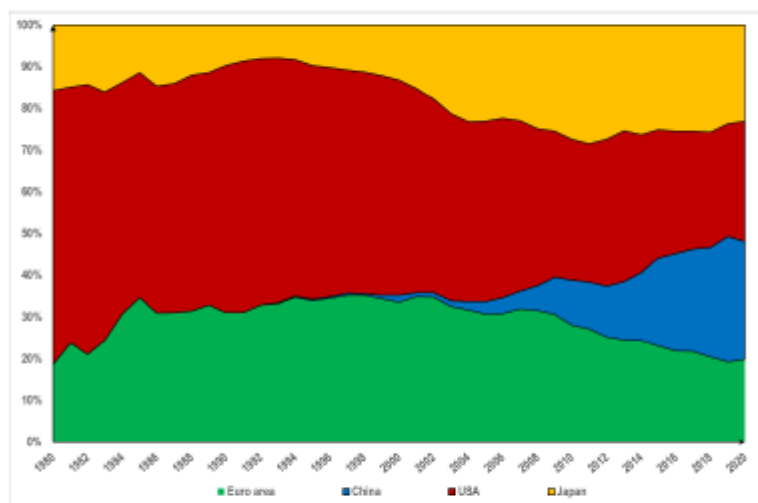


Figure: Patents filed under the PCT
(OECD)

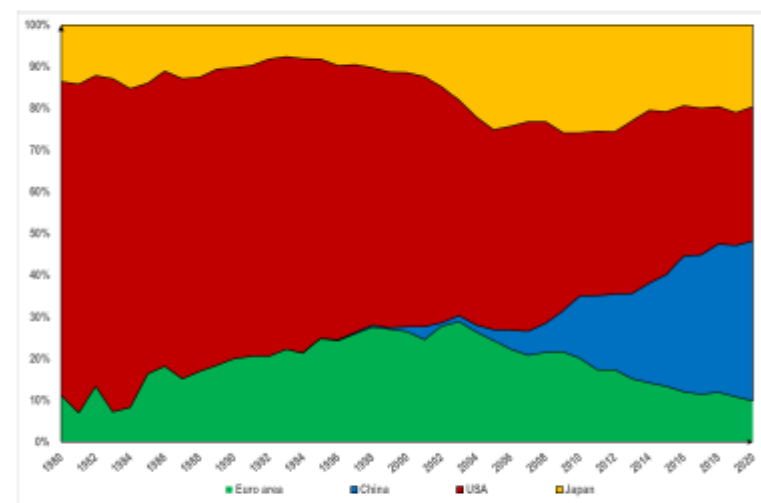
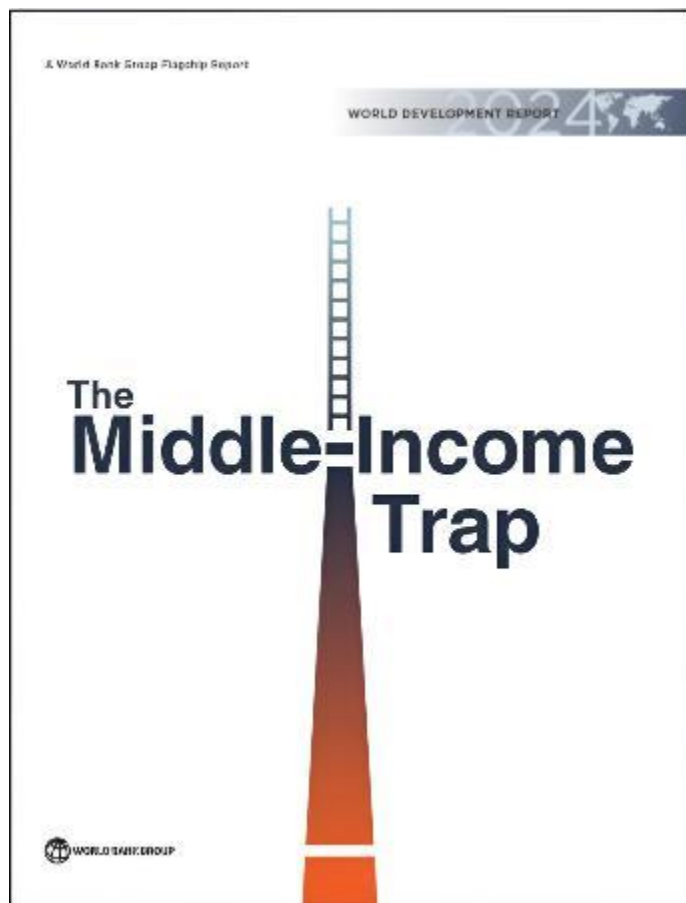
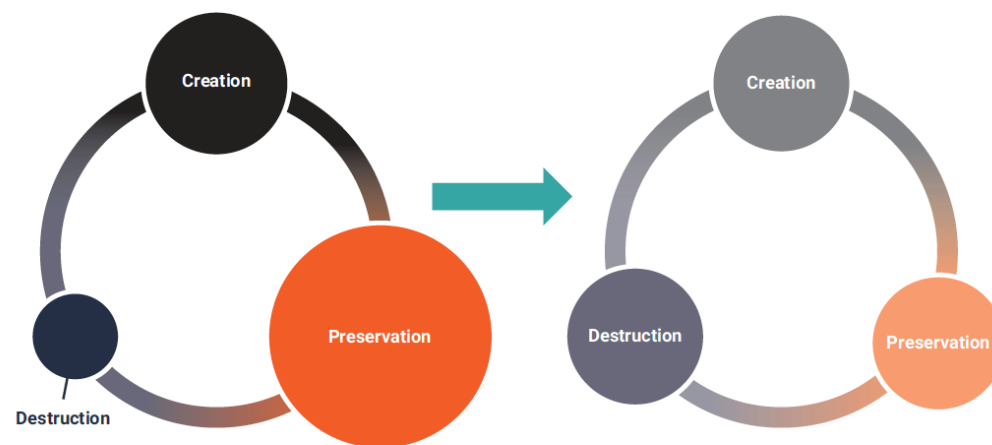


Figure: High technologies patents filed
under the PCT

WORLD DEVELOPMENT REPORT 2024 BY THE WORLD BANK



Middle Income Trap and Creative Destruction



Source: WDR 2024 team.

OUTLINE

- Historical enigma
- **Rethinking capitalism**

RETHINKING CAPITALISM

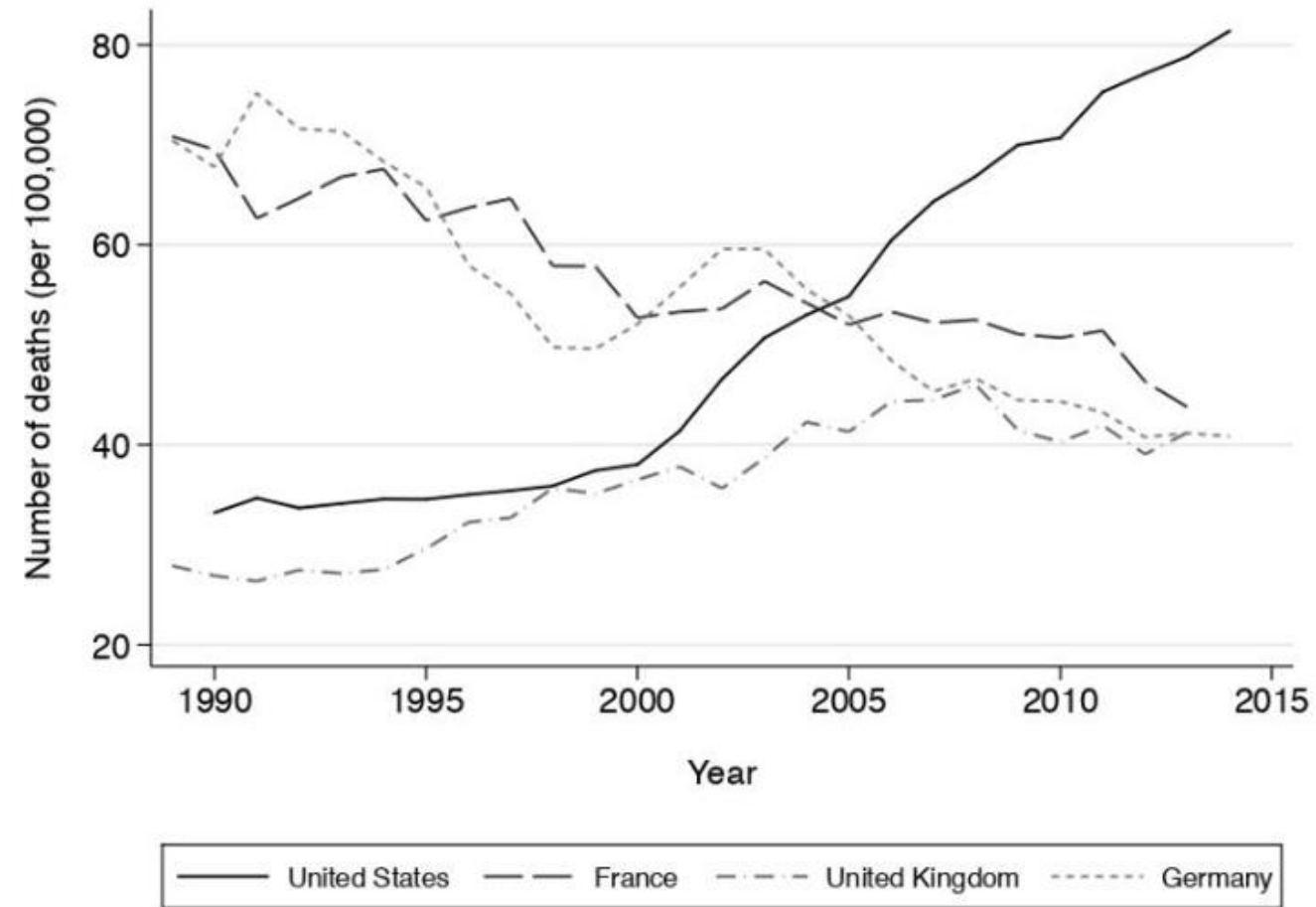
AGHION, ANTONIN, AND BUNEL (2020)

- US does poorly on inequality and social protection
- Europe does poorly on innovation

GINI AND POVERTY

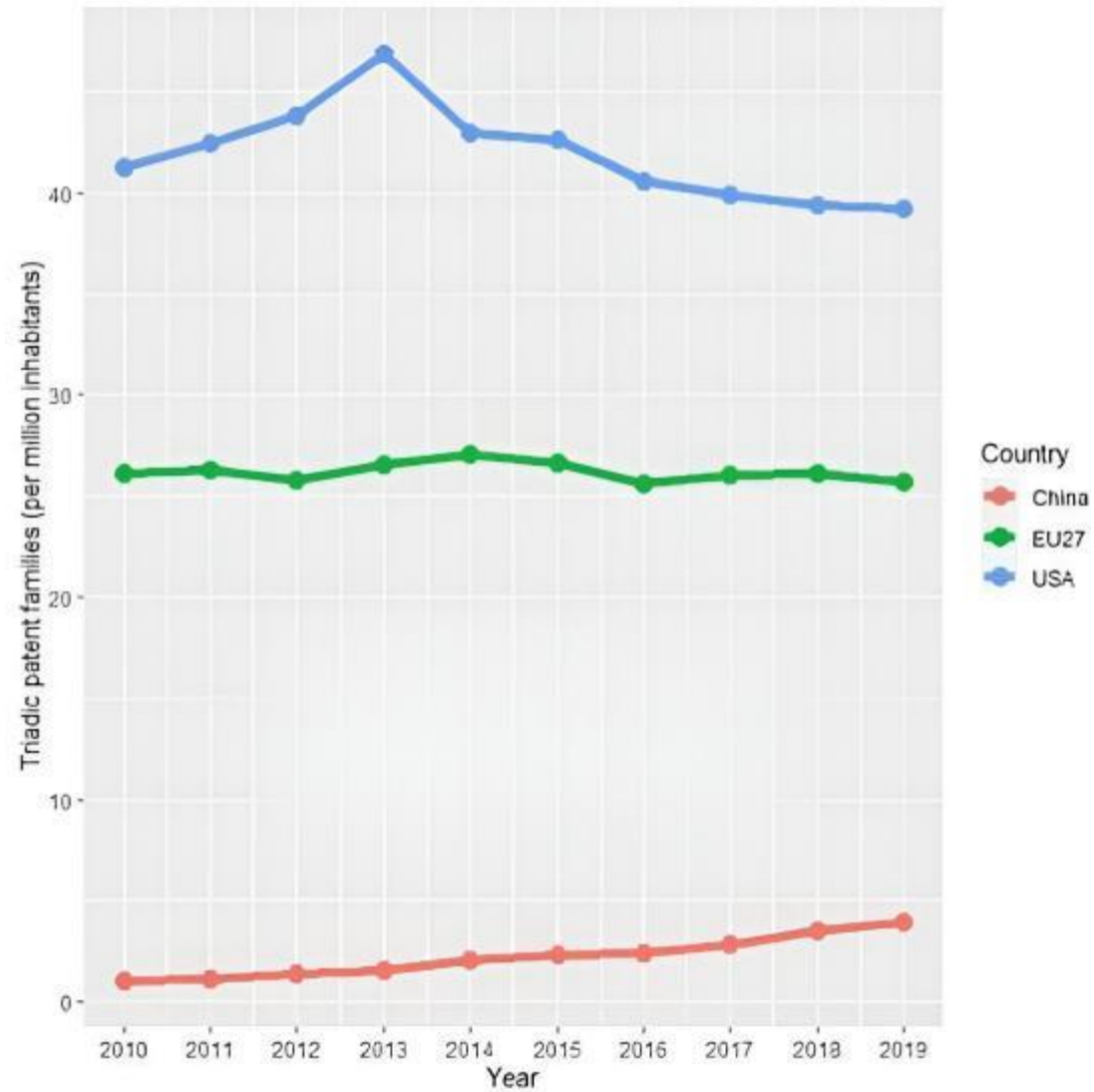
	Gini Index	Poverty Rate
United States	0.390	0.178
Germany	0.289	0.104
Sweden	0.282	0.093
Norway	0.262	0.084
France	0.292	0.081
Denmark	0.261	0.058

DEATH OF DESPAIR



Source: Case and Deaton (2017).

TRIADIC PATENTS



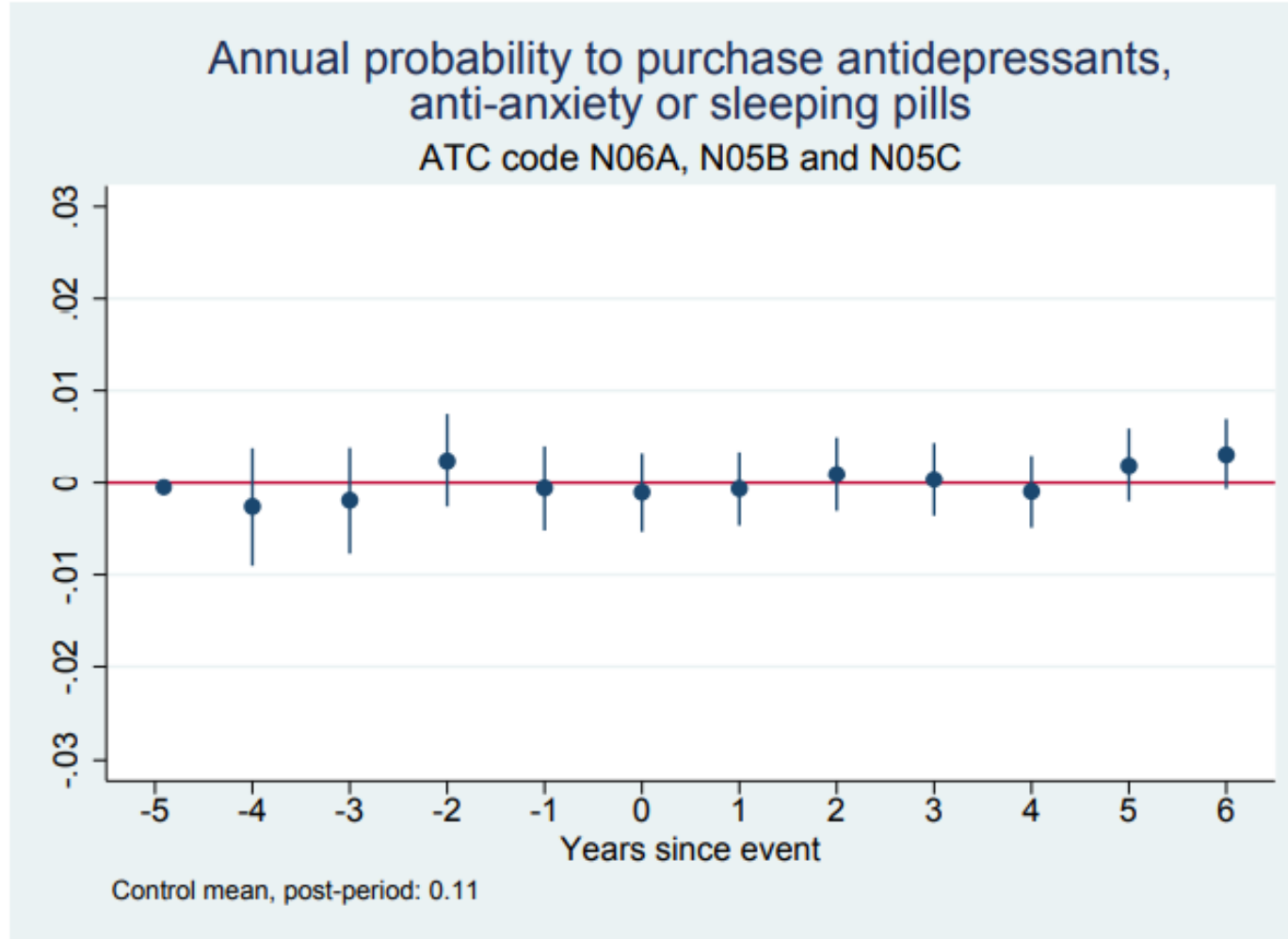
Triadic patents (per million inhabitants)

RETHINKING CAPITALISM

- Can we combine good side of American model (innovation) with good side of European model (protection)
- No trade off, rather, complementarity!!
 - Flexicurity
 - Education and lost Einsteins
 - Competition

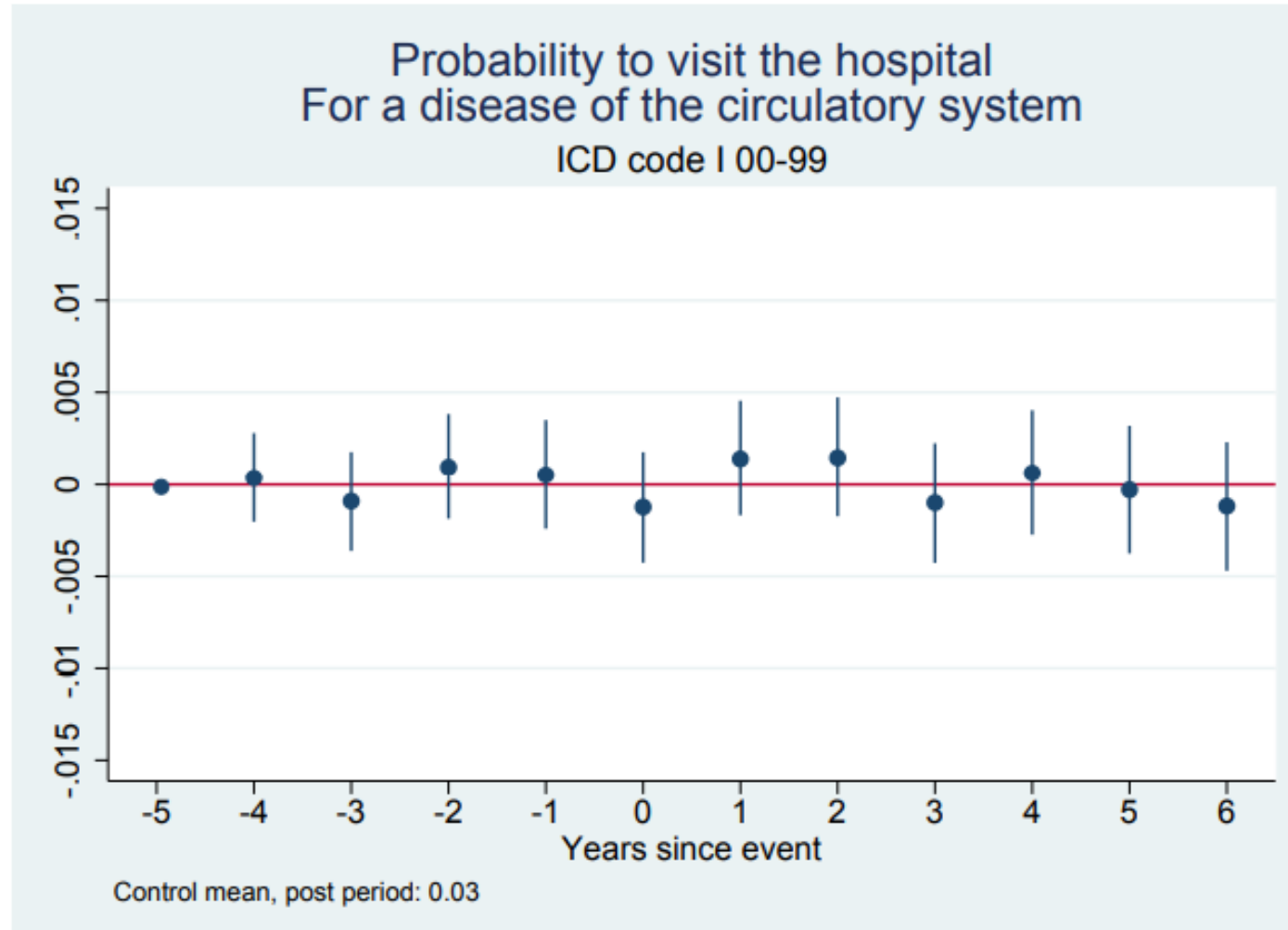
FLEXICURITY: DENMARK

Moving to health: Antidepressants and related drugs

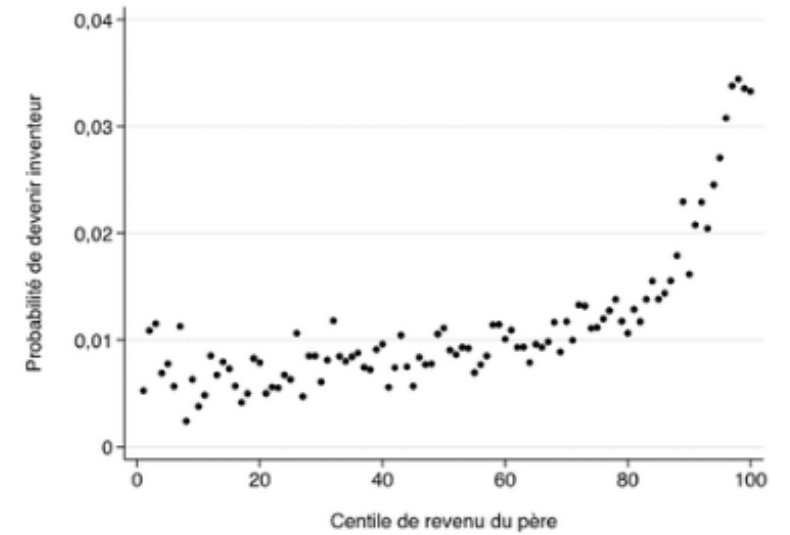
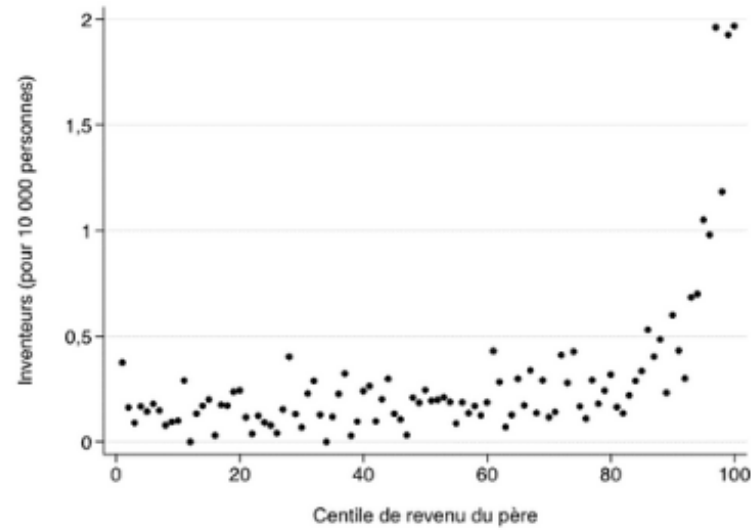
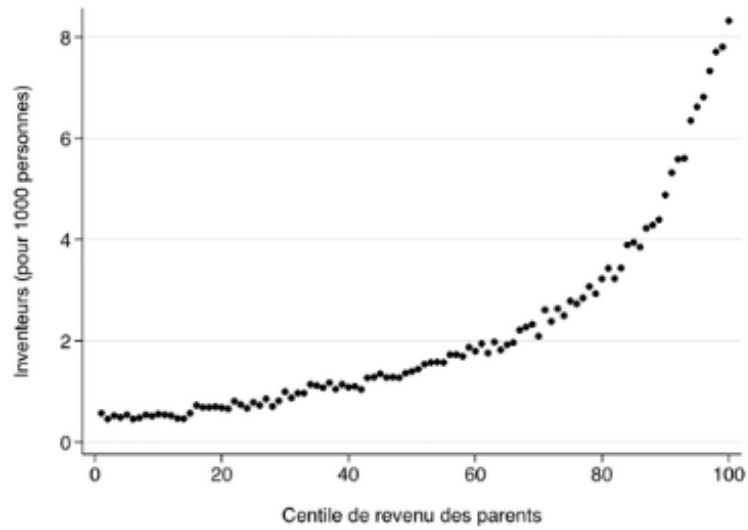


FLEXICURITY: DENMARK

Heart attacks



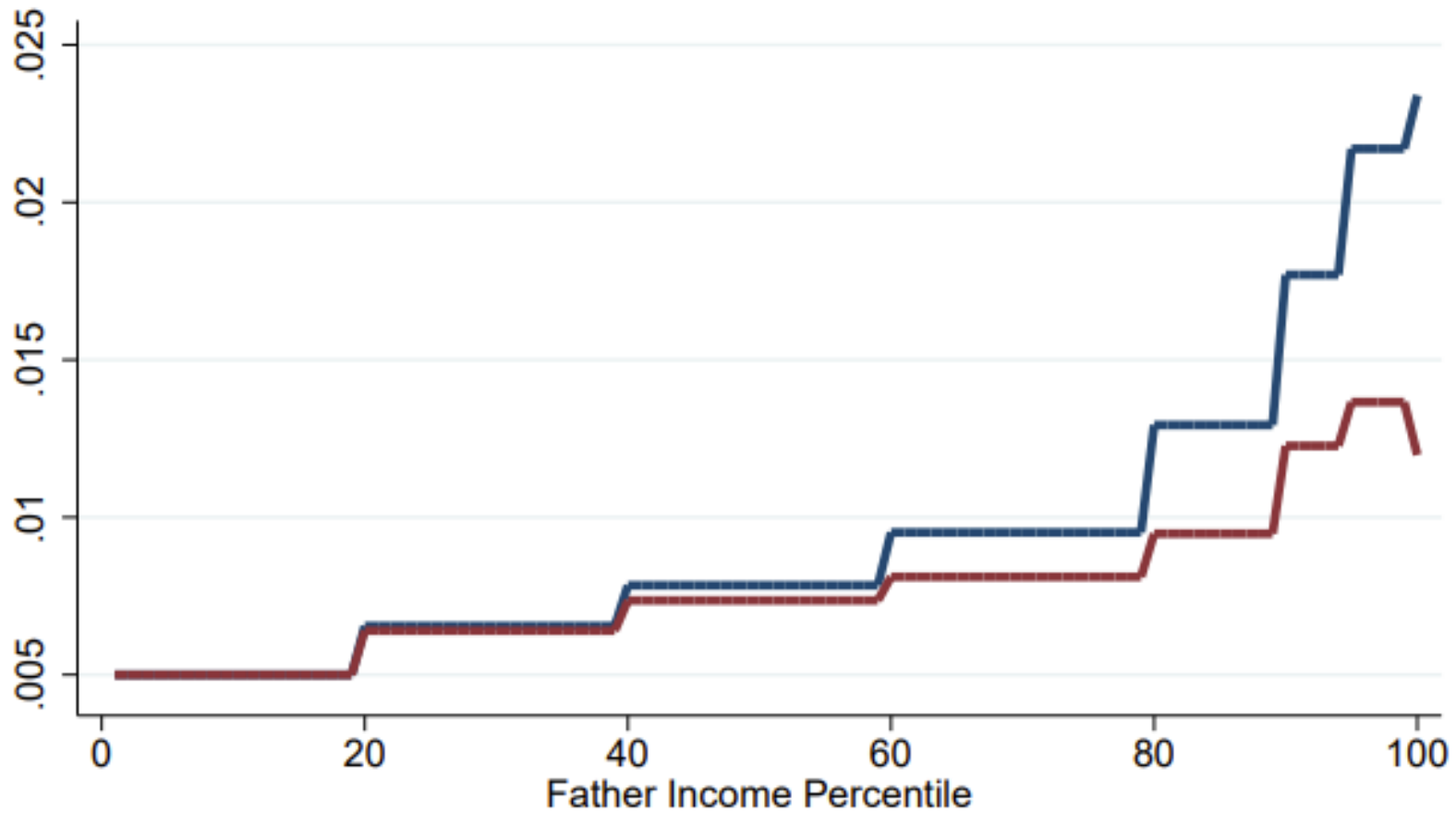
EDUCATION



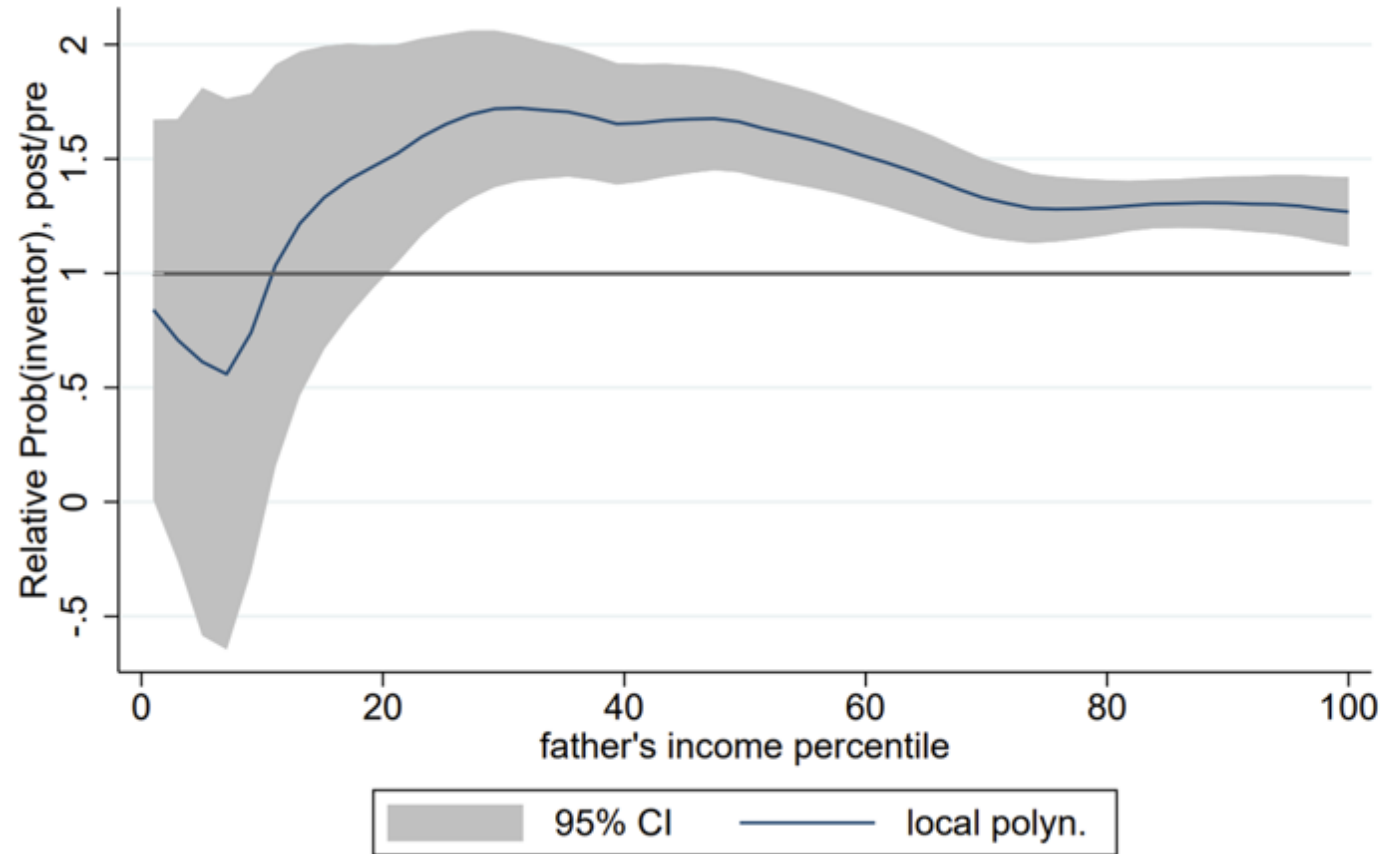
Sources: Bell, Chetty, Jaravel, Petkova and Van Reenen (2019) ; Akcigit, Grigsby and Nichols (2017) ; Aghion, Akcigit, Hyytinen and Toivanen (2017).

EDUCATION

Who Becomes an Inventor?

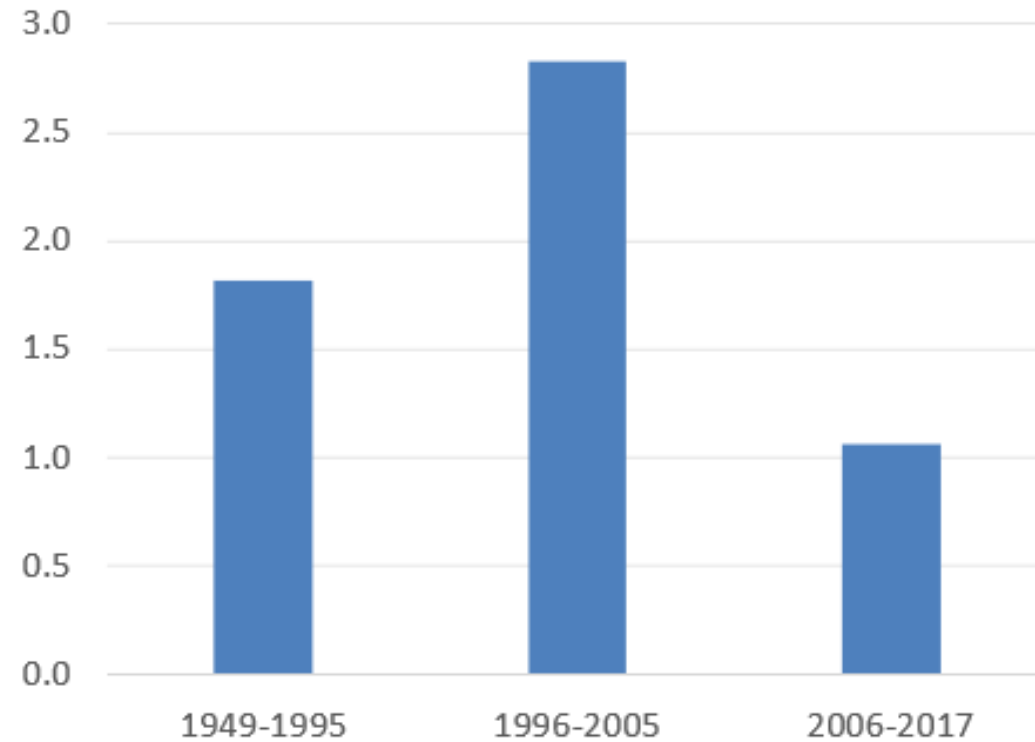


EDUCATION



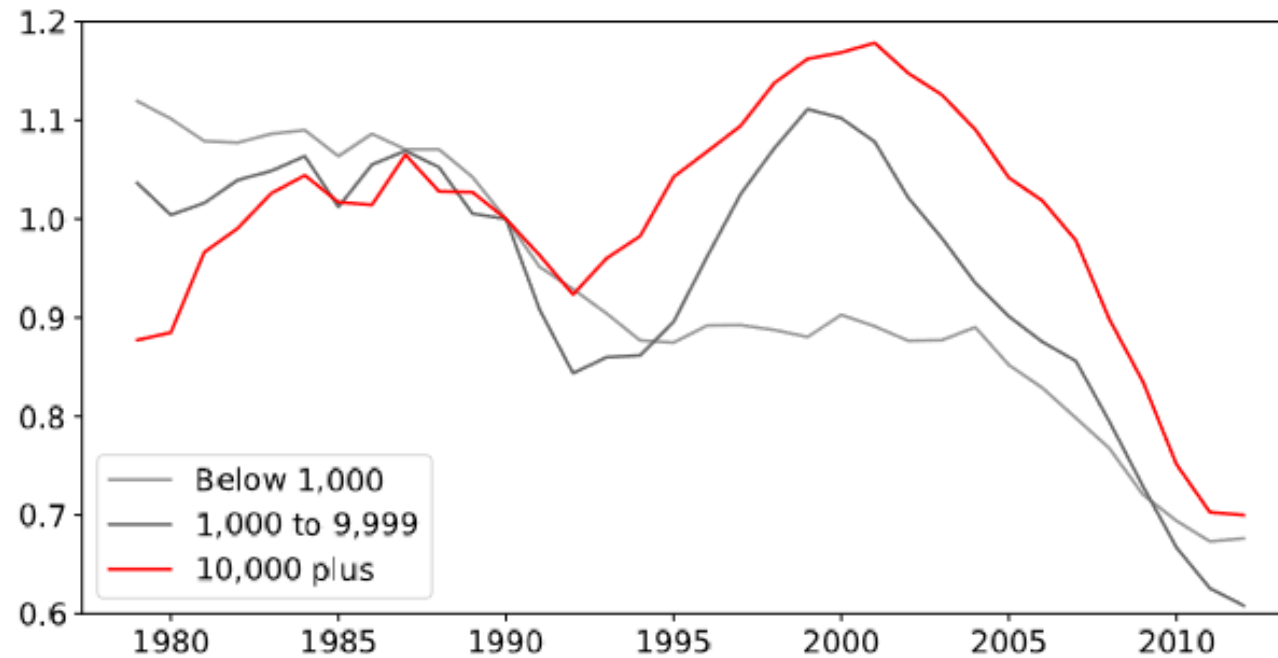
COMPETITION

RISE AND DECLINE IN TFP GROWTH



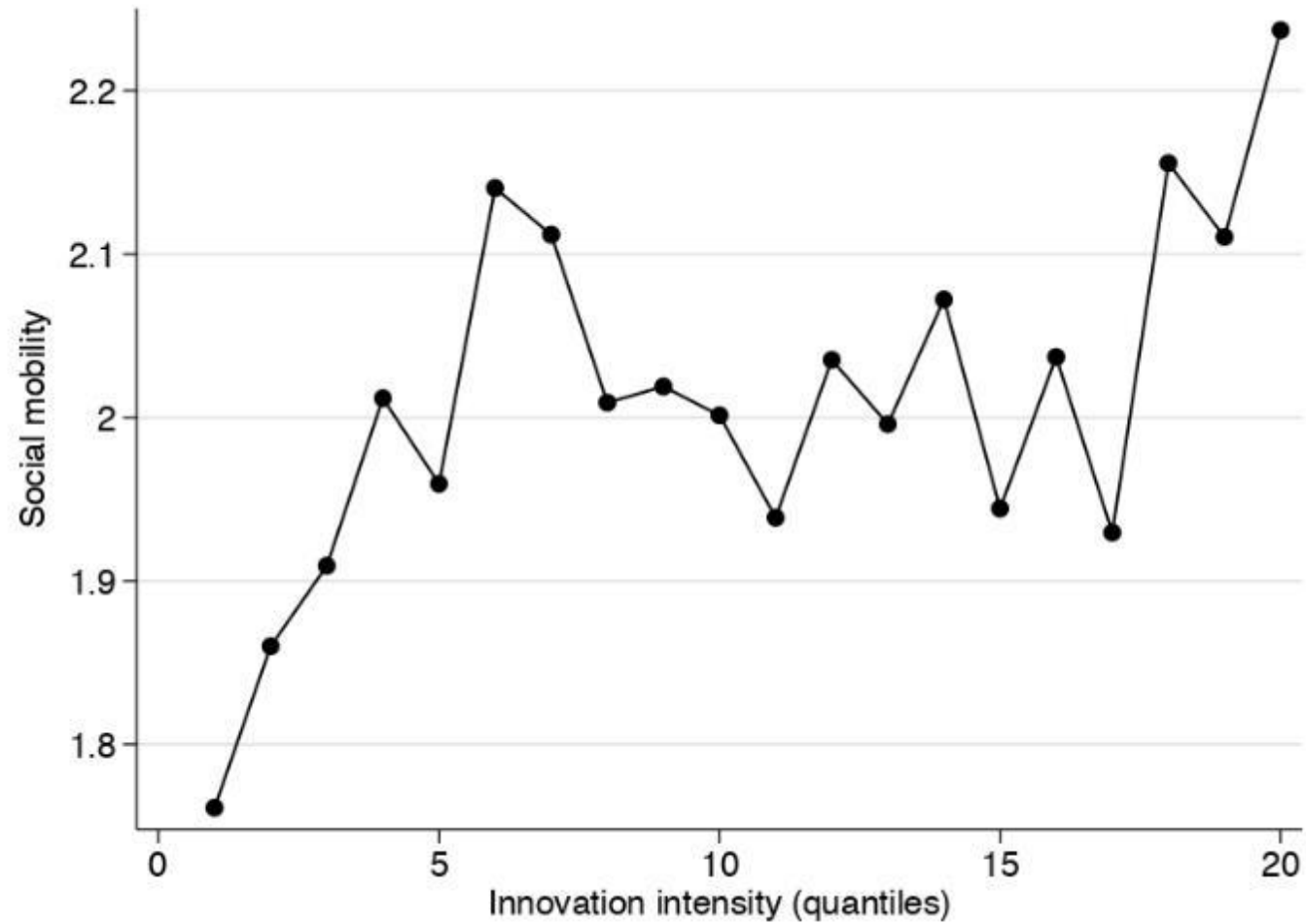
COMPETITION

Rise and decline in employment-weighted plant entry rate



Source: U.S. Census Bureau's *Business Dynamics Statistics*. Job creation by birth over total employment by firm size bins. 5-year centered moving average.

(ENTRANT) INNOVATION AND SOCIAL MOBILITY



Innovation and Social Mobility

Source: Aghion, Akcigit, Bergeaud, Blundell, Hemous (2018)

SHOULD WE FEAR AI?

AI AND GROWTH

AI should boost productivity growth as it automates both, the production of goods and services and the production of ideas (Aghion, Jones and Jones)

TFP GAINS OVER 10 YEARS

- Given the existing empirical literature, and abstracting from the ideas channel, increase in annual productivity growth should be in the interval [0.07pp; 1.24pp] over 10 years
- **Predicted increase in productivity growth:**
 - **Acemoglu: 0.07pp/year over 10 years**
 - **Aghion-Bunel: 0.68pp/year over 10 years**, an effect of the same order of magnitude as what the extrapolation from IT revolution would predict

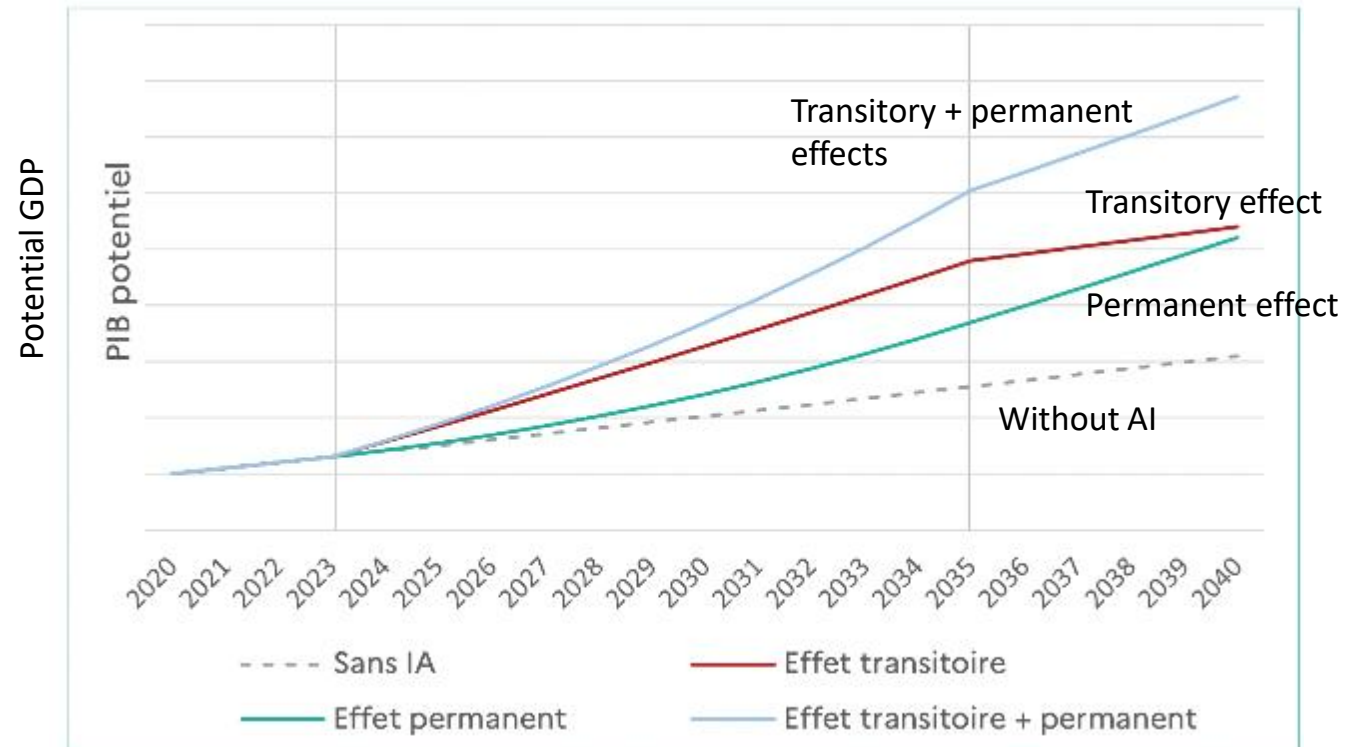
AI AND GROWTH

AI should boost productivity growth as it automates both, the production of goods and services **and the production of ideas** (Aghion, Jones and Jones)

AI AND GROWTH

Total expected effects of AI adoption on growth

(Report of Ministry of Economics, Finance and Industrial and Digital Sovereignty)

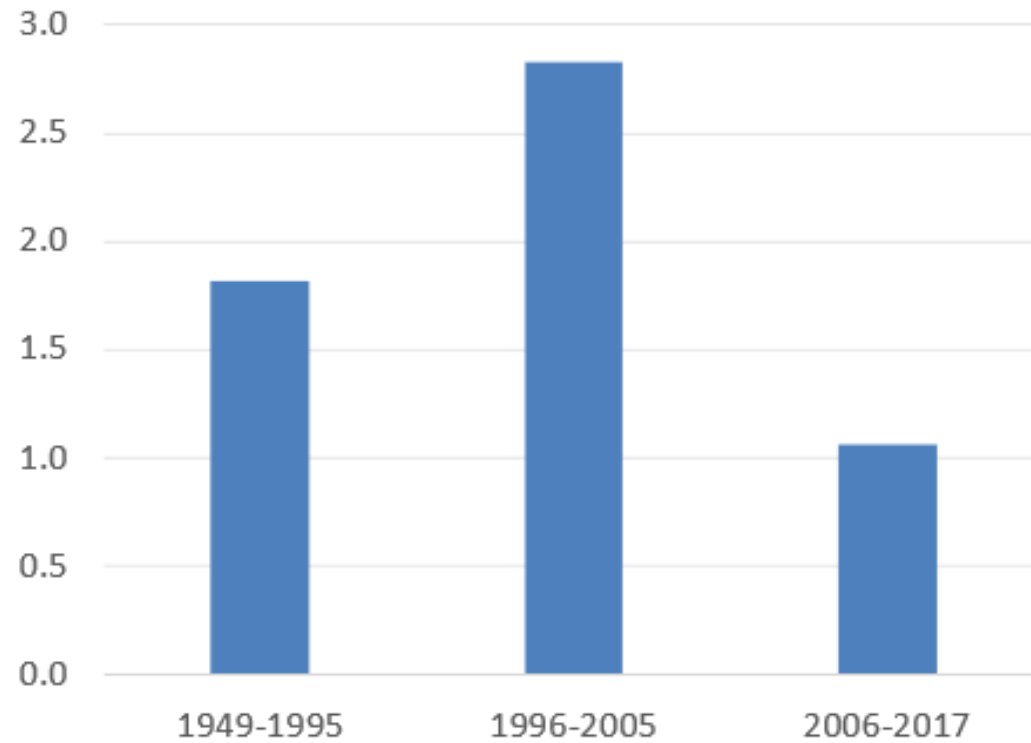


Graphique 3 : Effets totaux attendus de l'adoption de l'IA sur la croissance.

BUT LACK OF COMPETITION IS AN OBSTACLE

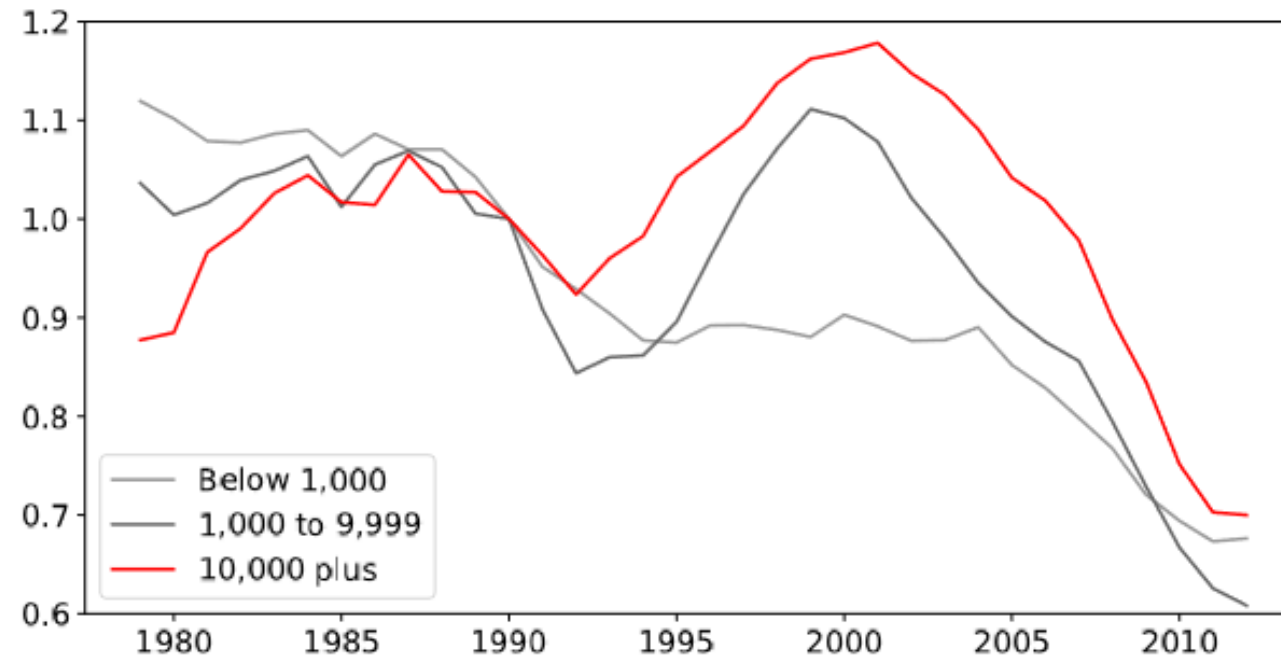
COMPETITION

RISE AND DECLINE IN TFP GROWTH



COMPETITION

Rise and decline in employment-weighted plant entry rate



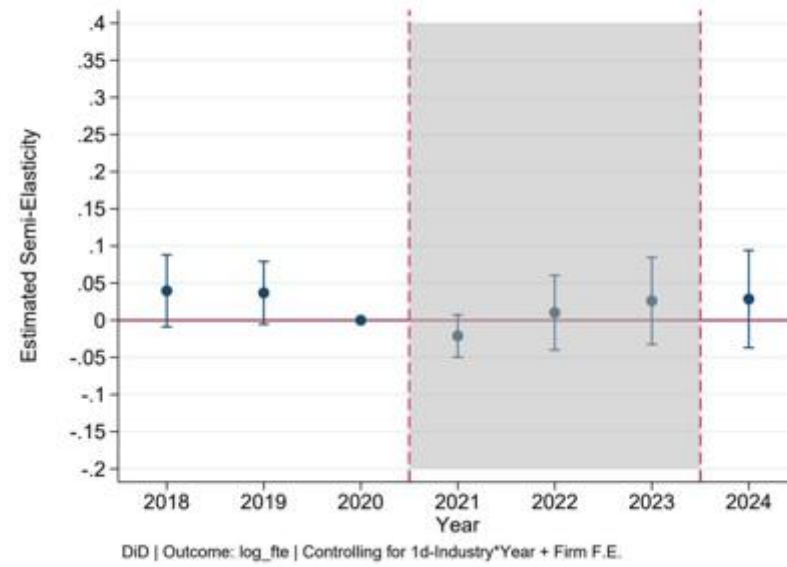
Source: U.S. Census Bureau's *Business Dynamics Statistics*. Job creation by birth over total employment by firm size bins. 5-year centered moving average.

OVERALL ON AI AND GROWTH

- AI has a high growth potential
- But inappropriate competition policy may hamper it
 - In particular the Cloud is dominated by three superstar firms: Amazon, Google, Microsoft
 - Only one big actor (GPU) on the market for graphic processes

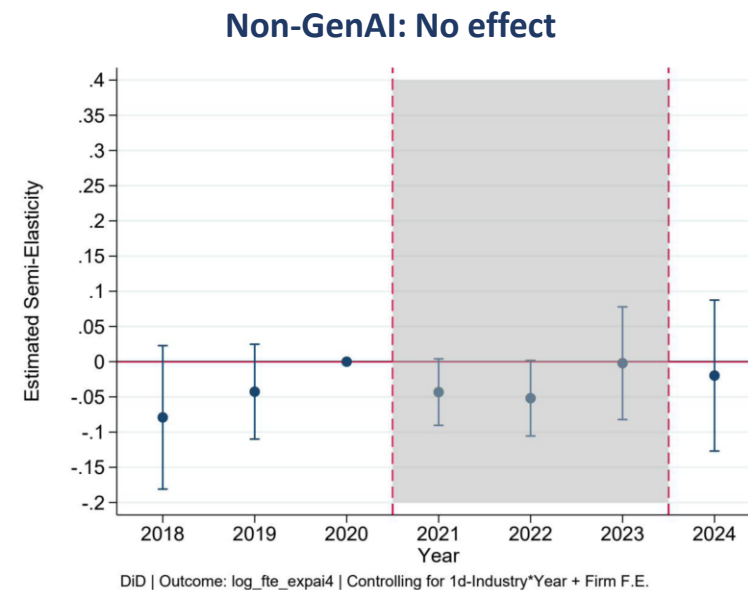
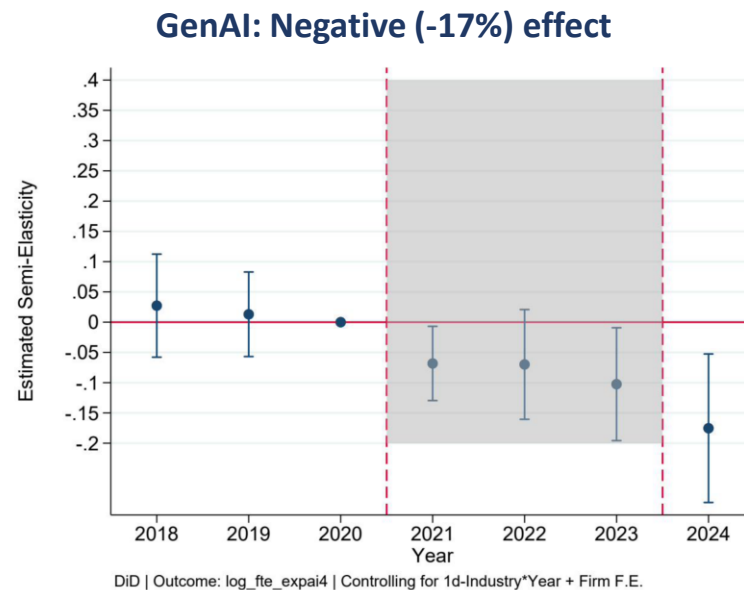
AI AND EMPLOYMENT

GenAI



Employment exposed and substitutable – AI for administrative use

- **Exposed & substitutable jobs** (Bergeaud 2024): high automation potential (teleworkers, secretaries, accountants)
- **When GenAI for administrative purposes:** negative and sizable (-17%) effect on exposed employment vs. no significant effect for Non-GenAI



AI AND EMPLOYMENT

AI will induce job destructions....

....but also job creation due to the productivity effect and the fact that IA will boost the production of new ideas...

Need for adequate education and flexicurity systems!

OVERALL ON AI

- Harnessing the growth potential of AI:
Competition
- Harnessing the job creation potential of AI:
education and flexsecurity

CONCLUSION (1)

- Creative destruction can deliver sustained and inclusive growth and prosperity provided appropriate policies are put in place

CONCLUSION (2)

- AI has considerable growth and employment creation potential but again appropriate policies need to be put in place

Thank you!